

CLAIMS

We claim:

- 1 1. A method for treating an electroless plating solution, the method comprising:
  - 2 providing a reaction vessel containing an anode, a cathode, a drain and a
  - 3 nozzle, wherein the nozzle is in fluid communication with the drain;
  - 4 disposing the electroless plating solution in the reaction vessel such that
  - 5 the anode and the cathode are at least partially immersed in the plating solution;
  - 6 recirculating the plating solution through the reaction vessel by draining
  - 7 the plating solution from the reaction vessel through the drain and subsequently
  - 8 re-injecting the plating solution into the reaction vessel through the nozzle;
  - 9 placing the anode and cathode in electrical communication with a power
  - 10 source and driving an electrical current through the anode and the cathode to
  - 11 produce a treated plating liquid.
- 1 2. The method of claim 1, including oxidizing plating solution reducing agents at
- 2 the anode and reducing plating solution metal salt at the cathode.
- 1 3. The method of claim 1, additionally comprising sparging the reaction vessel with
- 2 an inert gas to create a sparge gas.
- 1 4. The method of claim 3, wherein said sparging the reaction vessel includes
- 2 removing residual liquid from the sparge gas and venting the sparge gas to a
- 3 hydrogen gas scrubber.
- 1 5. The method of claim 3, wherein the inert gas consists essentially of nitrogen gas.
- 1 6. The method of claim 1, wherein the anode comprises steel and the cathode
- 2 comprises brass.
- 1 7. The method of claim 1, wherein the plating solution is maintained at a temperature
- 2 of about 50 degrees C or less.

1       8.     The method of claim 1, wherein the electrical current is between about 1 and  
2                   about 10 amperes.

1       9.     The method of claim 1, additionally comprising exposing the treated plating liquid  
2                   to an ion exchange resin.

1       10.    The method of claim 1, wherein the reaction vessel additionally comprises a metal  
2                   compound-restrictive filter disposed such that only substantially metal particle-  
3                   free liquid passes through the drain.

1       11.    The method of claim 1, including monitoring the progress of the treating.

1       12.    An apparatus for treating an electroless plating liquid, the apparatus comprising:  
2                   a reaction vessel;  
3                   a cathode and an anode in electrical communication with a power source,  
4                   wherein the cathode and anode are disposed in the interior of the reaction vessel;  
5                   a drain disposed in the reaction vessel;  
6                   a nozzle in fluid communication with the drain, disposed in the reaction  
7                   vessel such that the nozzle and the drain are separated by the cathode and the  
8                   anode.

1       13.    The apparatus of claim 12, additionally comprising a gas sparger in  
2                   communication with an inert gas source.

1       14.    The apparatus of claim 13, wherein the reaction vessel is vented and in  
2                   communication with a hydrogen gas scrubber.

1       15.    The apparatus of claim 12, wherein the reaction vessel additionally comprises a  
2                   heat exchanger.

1       16.    The apparatus of claim 12, wherein the anode comprises steel and the cathode  
2                   comprises brass.

1    17. The apparatus of claim 12, additionally comprising a metal compound-restrictive  
2    filter disposed such that only liquid substantially free of metal particles passes  
3    through the filter and through the drain.